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Urban touristification in Spanish cities: consequences for the rental-housing sector in San Sebastian

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ABSTRACT

This study aims to analyse the relationship between tourist growth in urban destinations and certain transformations apparent in main recipient cities. Particular attention is paid to the impact of tourism on housing in popular tourist destinations, and on the people who live there. We focus on the case of San Sebastian, in Spain, which is a major tourist destination and, together with Dubrovnik, Venice, Barcelona and Amsterdam, is one of the European cities which has seen a growing concern over mass tourism. Firstly, this study seeks to analyse different research approaches conducted over recent years on the complex relationship between tourism and the rental-housing sector. Secondly, the study examines whether the increase in the intensity of use of the Airbnb platform is related to the price asked when renting a property long-term. The analysis conducted shows that a one standard deviation increase in Airbnb intensity is associated with an increase of 7.3% in rental prices. Our suggestions for urban planners and managers in charge of urban tourist destinations are for greater regulation of tourist accommodation in line with long-term house rentals.

1. Introduction

World tourism grew by 6% in 2018, with 1.4 billion travellers around the globe. This surpassed the number predicted in 2010 by the World Tourism Organisation for 2020, two years earlier than expected (UNWTO, 2019). The increasingly important role of tourism in global cities and metropolises impacts not only on the economic structures of cities but also on their image, with deep economic, social, political and cultural implications (Butnaru et al., 2018; Przybyła et al., 2019).

Over the last decade, a significant number of European cities have experienced a huge rise in tourism. This phenomenon has occurred both in large cities, such as Barcelona and Paris, and in smaller cities, like Dubrovnik and Donostia-San

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Sebastián[1] (González et al., 2018). This means that maximising the positive effects of tourism (on the economy, employment and the wealth of cultural exchange), while managing the city transformation stemming from touristification and gentrification, has become an even greater challenge. For the first time it appears that certain urban tourist destinations are beginning to consider, as a central element of planning, ways to minimise the negative impact that tourism might have on citizens and on the destination itself (sustainability, citizen participation, limiting saturation, etc.). Sustainability in tourism is multi-dimensional because the social, economic and environmental dimensions in tourism are very extensive (Hashemkhani et al., 2015).

Certain cities, such as Amsterdam, Barcelona and Venice, are attempting to follow sustainable urban tourism policies based on land-use planning, protected housing, commerce regulations and mobility strategies (González et al., 2018).

The recent rapid expansion of touristification brings with it certain critical factors that have fuelled citizen indignation and local resistance within the 'touristic city'. Some of the issues raised are the impact on local real estate markets (touristic gentrification), city development based on a tourism monoculture, the expulsion of families from touristified quarters and the deterioration of neighbourhoods and communities (Gil & Sequera, 2018).

This study aims to analyse the relationship between tourist growth at urban destinations and certain transformations appearing among main recipient cities. Particular attention is paid to the impact of tourism on housing in popular tourist destinations, and on the people who live there.

Within this context, the study first seeks to analyse, order and classify different research approaches conducted in recent years on the complex relationship between tourism and its effect on the host city. The study aims to define how tourism affects the housing market at destination cities, particularly high-impact processes such as increased holiday housing rentals (via Airbnb or similar platforms) or other lodging formats.

Airbnb is a short-term housing rental service whose platform connects travellers with hosts. Its clients interact with the service just like a hotel (reserving a lodging) but the hosts charge for the occupation of a free room or an entire house while Airbnb collects a commission of 8%–18% per reservation. The company was launched in 2008 and currently advertises over six million properties around the world. In this brief period of time, it has entirely revolutionised the lodging sector globally.

However, Airbnb's impact on cities and the housing market is not very well understood as the company makes every effort to conceal its operations from scrutiny. Airbnb's business model has been particularly controversial since it does little to enforce the regulations on housing and land use in many of the cities where it operates, thus undermining policies designed to protect local residential markets (Wachsmuth & Weisler, 2018).

Our study begins with a review of research work published throughout the 21st century from the following perspectives: the effect of tourism on local populations; the impact of tourism on the residential market; and specifically, the role that online holiday rental platforms (mainly Airbnb) play in these urban and social dynamics.

We aim to explore the impact of the growing use of tourist apartments on the price of the residential rental market in the city of San Sebastian and to analyse

whether the increase in short term renting has brought about the increase in long term rental prices.

This paper makes two main contributions to the existing literature. Firstly, we carry out a thorough review of the possible negative consequences of tourism in the host city, linking this perspective to the debate about whether platforms like Airbnb should be considered collaborative economics. This review can be found in sections two and three. Secondly, we provide an empirical investigation of how Airbnb is affecting the rental market in a European touristic city, San Sebastian. The city analysed in this study is one of the cities that receives most tourists and has the most expensive housing prices in Spain, ahead of Barcelona and Madrid. Our evidence reinforces what has already been identified in other cities with a significant influx of tourists. Using a fixed effects model to control for unobserved variables to enable the calculation of precise estimates of the impact of Airbnb on rental prices, we aim to identify an association between the intensity of Airbnb use and the evolution of rental prices. Section four presents the case of San Sebastian and carries out the above-mentioned empirical study.

2. The emergence of voices decrying limitless tourism

Over the last few decades of the 20th century, urban policy has been increasingly transformed into economic development and business policy as cities have been forced into a global inter-city competition for investment and economic growth. Consumption, culture and recreation has taken centre stage in the political economy of cities as productive sectors in their own right, offering a way of achieving competitive advantage. Those responsible for town planning have focussed more and more on marketing strategies and creating images and brands to promote cities as value-generating units (Harvey, 1989).

At the same time, restructuring processes in recent decades (during which activities previously considered peripheral to a 'productive city', such as tourism and recreation, took a central role in political economy of cities) have coincided with the intensification of inequalities of several types (Colomb & Novy, 2016). The contemporary city, as well as being increasingly overtaken by consumption (Miles & Miles, 2004), has also become more fragmented or split.

Ever-higher rents and housing prices increasingly price out low-income groups, while the most dynamic and desirable destinations are becoming playgrounds exclusively for the rich (Cócola-Gant, 2016; Gil & Sequera, 2018; Janoschka et al., 2020). It is no coincidence that the increasing social polarisation and inequality as well as gentrification and destruction of low-income communities have become defining characteristics of the current urban reality. In fact, this is the direct result, and often a deliberate result, of policy actions such as reducing social subsidies, dismantling public housing and changing to market-oriented urban development strategies (Navarro, 2016).

Urban tourism is intrinsically related to these trends in a number of ways. In terms of public policy, tourism has become a popular priority on the agenda of local developers who, hungry for growth, are given funding and public investments

possibly at the expense of other policy spheres (for example, the welfare state) (Navarro, 2016). An increasingly debated criticism in urban research is that tourism contributes to the commodification and destruction of cultures and places and tends to establish moving dynamics that can lead to an erosion of the very attributes that made the destination attractive to tourists in the first place (Harvey, 2002).

3. Effects of the residential aspect of tourism on the housing market: can we talk about collaborative economy?

Although the possible sources of conflict mentioned in the previous section are complex and include a variety of factors (Colomb & Novy, 2016), we focus our analysis on some of the economic aspects; an increase in both short-term rental housing units and in housing purchase and rental prices.

Tourism is one of the sectors where the sharing economy is having the greatest effect, since in almost every element that makes up its chain of value (lodging, leisure, food, transport, etc.), there are practices which prompt a rethink in current understanding of the sector (Moreno-Izquierdo et al., 2016). However, this increase in the sharing economy has led to the emergence of regulatory challenges regarding the rights of individuals or of certain collectives. In fact, in many instances, the original sharing economy spirit of many of these platforms is brought into question (Martin, 2016).

Airbnb is no exception to this discussion. Defenders of Airbnb argue that sharing their home means that residents can obtain additional income which allows certain individuals to continue living in housing markets that quickly appreciate (Horn & Merante, 2017). One of the main criticisms is the effect that this kind of platform has on local rentals. As we pointed out previously, some homeowners change from offering long-term rental properties to the short-term rental market, moving away from a residential to a non-residential profile (Janoschka et al., 2020; Navarro, 2016; Samaan, 2015). A recent study conducted in Boston by Horn and Merante (2017) found that a one standard deviation increase in Airbnb intensity is correlated with a 5.9% decrease in the number of rental units offered for rent. Given that the total supply of houses is inelastic in the short term, this leads to rental price rises on the long-term market creating expulsion dynamics (Gurran & Phibbs, 2017; Horn & Merante, 2017). A technical report from 2015, the Los Angeles Alliance for a New Economy (LAANE), estimated that platforms offering short-term shared housing eliminated 11 units from the local rental market every day, practically wiping out any benefits hoped to be gained since 2010 from the building of new homes with a view to countering rental increases (Wachsmuth & Weisler, 2018).

Another common criticism is to do with the current philosophy of the platform itself. The sharing economy should mobilise a resource which is underused in certain periods or where it was previously used for different purposes (Horn & Merante, 2017).

With Airbnb, this requirement is fulfilled with sporadic hosts who rent out their personal dwelling when it is not being used (when they go on holiday, for example). In practice, professional hosts and investors have increasingly greater representation

Table 1. Distribution in Airbnb supply in certain Spanish cities.

City	Multiple supply quota	Quota of 10 greatest posters	Available over 90 days per year	Average days available	Posted adverts per 1000 inhabitants
Barcelona	62.4%	5.28%	65.3%	193.6	11.32
Madrid	55.3%	5.09%	59%	165.3	5.37
Valencia	56.4%	8.03%	83.9%	189.9	8.28
Málaga	69.6%	14.1%	84.4%	215.5	8.38
San Sebastian	62.2%	22.28%	59.3%	176.4	7.91
Vitoria	46.7%	21.83%	45.2%	123.2	0.79
Palma	64.2%	10.4%	82.5%	202.5	4.02
Bilbao	45.9%	10.86%	59%	165	2.91
Seville	67.7%	7.37%	81.8%	180.5	7.99

Source: By the authors from Inside Airbnb (2019).

on the Airbnb platform and do not fulfil this basic principle of the sharing economy (Gil & Sequera, 2018). These are agents (real estate, specialised companies and large and small homeowners) who remove housing from the residential market to put it on Airbnb and offer it for short-term holiday lets all year round.

'Differentiating between Airbnb activity that follows the P2P model and activity that follows the commercial model is essential because the impact of both types on touristification processes vary considerably from one case to another. The greater the weight of the commercial model in a city, the greater its impact on touristification processes. On the other hand, the greater the weight of the P2P model in a city, the lesser its impact on touristification processes' (Gil & Sequera, 2018, p. 19).

This is seen in large Spanish cities such as Madrid and Barcelona where, although the majority of hosts follow this P2P model, other hosts appear to hold large portfolios of real estate properties on the Airbnb platform.

If we conduct this analysis through the data provided by Inside Airbnb (2019) for a number of large and medium-sized Spanish cities, we can see that this phenomenon is widely present, especially in the most touristic destinations such as Malaga, Palma, Barcelona and San Sebastian, with commercial host rates above 60% (Table 1).

In column 1, we can see that in San Sebastian 62.2% of the listings correspond to hosts with more than one listing, and in column 2, 22.28% of the total listings belongs to the top 10 advertisers in San Sebastian.

4. Consequences for the rental housing sector in San Sebastian

4.1. San Sebastian as a tourist destination

San Sebastian has been a point of reference in the world tourism sector since the 19th century. In fact, according to the tourist competitiveness ranking by cities in Spain, Urbantur (Exceltur, 2017), San Sebastian is fourth in the ranking (see Table 2).

Although the number of tourists attracted to San Sebastian is not comparable to large cities like Barcelona or Madrid, it nevertheless hosts a significant number of visitors every year: in 2019, a total of 1,524,664 overnight stays were recorded, based on EUSTAT- Basque Institute of Statistics data.[2] This represents an increase of 55.88% compared to 2014.

Table 2. Tourist competitiveness ranking by city in Spain.

	City	Average index: 100
1	Barcelona	145.8
2	Madrid	138.0
3	Valencia	108.2
4	San Sebastián	104.5
5	Málaga	103.0
6	Seville	102.2
7	Palma de Mallorca	101.5
8	Bilbao	99.2
9	Santiago de Compostela	96.4
10	Gijón	96.3

Source: By the authors from Exceltur (2017).

In addition to quantitative data, in qualitative terms this is a very highly-valued tourist destination, as shown by the different awards that the city receives from multiple national and international agents.

Over the past few years, and especially during the summers of 2017 and 2018, there have been various protests against the negative effects of tourism on San Sebastian (Coldwell, 2017; Díaz de Sarralde, 2018; Kettle, 2017; Naiz, 2017). These appear to be isolated incidents but it is true that even Public administration has increasingly underlined the importance of integrating sustainability and well-being of the local population into the tourist strategy and not investing in growth 'at any price', (in the words of the current councillor of tourism in San Sebastian) (Europa Press, 2018).

In fact, municipal regulation on tourist lodging offered by short-term rental has been recently enforced. Processing the regulation led to controversy, with allegations from different interest groups. Citizen sectors and neighbourhood movements consider that it grants excessive flexibility to pre-existing restrictions in the General Plan, while agents closer to the owners' perspective have rated it as more restrictive and unjustified (Azurmendi, 2018).

The reality is that Airbnb's rental capacity in 2017 was almost as much as the regulated hotels (7349 Airbnb vacancies, as opposed to 9100 hotel vacancies (the sum of hotels, lodges and pensions) (Montera34, 2017).

Approximately two-thirds of Airbnb's accommodation in San Sebastian is located in the centre (Centre + Old Town) and in the neighbourhood of Gros north of the city, with over one thousand advertised properties (Figure 1).

Regarding the concentration of offer, which was discussed in depth earlier in this paper, the 10 main hosts per number of advertised properties on Airbnb in San Sebastian accounted for 328 (22%) of the total 1472 flats or rooms advertised on the platform at the end of 2018. The three main advertisers alone held 12% of the total offers (Inside Airbnb, 2019). The 10 main Airbnb advertisers in 2017 (1.1% of the advertisers) offered 2335 lodging vacancies (31% of the total) (Montera34, 2017).

4.2. Methodology

We use an empirical study to check our hypothesis that the increase in the usage of short-term rental units drive up rental prices in the city of San Sebastian. For the
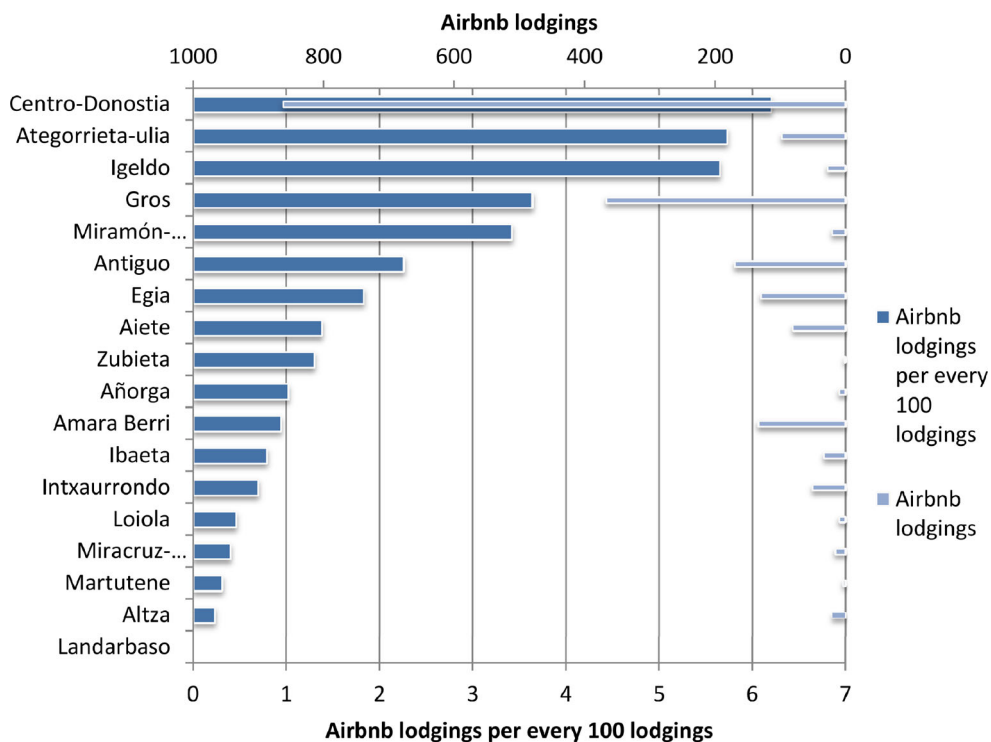
Figure 1. Airbnb presence in San Sebastian's neighbourhoods. Source: By authors from Montera34 (2019).

purpose of our study, we assume that, due to the maximisation utility theory, the owners of a residential housing unit would prefer to list the unit in the short-term rental market rather than list it in the long-term rental market if the first option offered greater benefits (Müller, 2014). An increase in the usage of short-term rental units would encourage owners to shift their units from the long-term rental to the short-term rental market. If this were the case, it could be assumed that this phenomenon would decrease the supply of rental housing units listed for long-term rent, limiting availability and therefore pushing rental prices up.

However, the potential earnings from short term rentals push up the demand for more units by owners and by tenants looking to sublet on home sharing platforms (Horn & Merante, 2017). In addition, an increase in the use of short-term rental usage could be an indicator of the desirability of the area, which will push up the demand.

In summary, our hypothesis is that the emergence of the short-term rental market operates both through an increase in the demand for housing because of the income opportunity offered by these new platforms, and a decrease in the supply of rental units listed for long-term rental. Both changes would contribute to the increase of rental prices of long-term units.

We aim to measure the impact of Airbnb on long-term rental prices. We have calculated the number of reviews received by all the Airbnb listings in a neighbourhood and divided this by the total number of housing units in that neighbourhood. Our

approach differs slightly from others found in the literature, where the Airbnb density, calculated using the number of Airbnb listings instead of the number of reviews, is used (Horn & Merante, 2017).

Airbnb asks the visitors to review both the listings and hosts after their stay, and they put great importance, with significant success, on encouraging visitors to write reviews. As shown by Fradkin et al. (2018), 67% of visitors write reviews. As Alyakoob and Rahman (2019) argued, areas with a large number of listings do not necessarily attract visitors (and consequently generate spill-over effects) so it is preferable to use reviews to measure the Airbnb intensity.

Due to the increasing availability of rental data and faster market adjustments, studies on the effect of changes in demand/supply of housing on residential rental costs are now carried out with a shorter lag, between every 1 and 6 months, rather than the traditional one year lag. We therefore focus our analysis on testing the effect of Airbnb on the asking rents of the preceding month.

A hedonic model is used to estimate asking rents in relation to the Airbnb intensity of the previous period and other studied variables, including fixed effects at the neighbourhood and month/year levels, to control for unobserved neighbourhood and time-related effects. We use the following regression model,

$$log_{10}(Rent_{i,t,n}) = \alpha + \beta_1 Airbnb_{t-1,n} + \beta_2 Bed_{i,t,n} + \beta_3 Bath_{i,t,n} + \beta_4 Sqm_{i,t,n}$$
$$+ \beta_5 Elev_{i,t,n} + \beta_6 UR_{t,n} + \delta_t + \eta_n + \varepsilon_{i,t,n},$$

where the indices i, t, and n indicate rental units and period, and neighbourhood, respectively. $Rent_{i,t,n}$ represents the asking rents of a unit; $Airbnb_{t-1,n}$, the Airbnb intensity of a neighbourhood at a given time (in the period before the observed period of the rental unit), calculated as the number of reviews received by all the units listed on Airbnb divided by the total number of housing units; $Bed_{i,t,n}$ is the number of bedrooms of the listed unit; $Bath_{i,t,n}$ is the number of bathrooms; $Sqm_{i,t,n}$ is the size of the listed unit in hundreds of square metres; $Elev_{i,t,n}$ represents whether the listed unit's building has an elevator; $UR_{t,n}$ is the annual unemployment change rate in a neighbourhood. We include fixed effects at year-month level (δ_t) and neighbourhood level (η_n) to account for unobserved neighbourhood and time-varying factors that may affect rental prices.

A sensitivity analysis is performed by means of censoring the neighbourhoods in which the number of housing units varies more than 3% in the period 2013–2018. All p-values are two-sided. All the statistical analyses are carried out with R version 3.6.0.

4.3. Data

We use rental data from a database of Statistical Authority of the Department of the Environment, Spatial Planning and Housing of the Basque Country Government. The database comprises listings of housing for rent based on Idealista Inc., a service that aggregates listings of housing for rent and sale. These data include a monthly count of each housing unit offered for rent in San Sebastian from January 2013 through

Table 3. Descriptive statistics on rental units.

	Mean	Standard deviation	Count
Price	1013€	458	17832
Bedrooms	2.28	0.95	17832
Bathrooms	1.42	0.57	17832
Square metres	79.15	35.10	17832
	%		Count
Elevator	76.54		17655

Source: By the authors from data from Idealista.com obtained from Statistical Authority of the Department of the Environment, Spatial Planning and Housing of the Basque Country Government.

Table 4. Descriptive statistics on the number of housing units by neighbourhood.

Maximal variation ratio	Min.	1st Qu.	Median	Mean	3rd Qu.	Max.	Count
	0.7755	2.1340	2.6694	4.3949	4.4160	25.8562	17

Source: By the authors from data from EUSTAT- Basque Institute of Statistics.

December 2018, a total of 18,070 listings. We excluded 230 listings with asking rents lower than 400 euros, as these probably refer to rental bedrooms instead of whole units, and 8 listings with asking rents over 20,000 euros. The data-set includes the asking price, size in square metres, number of bedrooms and bathrooms, whether it has access to an elevator and the property's location in the form of longitude and latitude coordinates. Table 3 shows us that the mean rent during our study period was 1013 euros with a standard deviation of 458 euros averaged across neighbourhoods.

In order to measure changes in housing supply we use data on total housing units from EUSTAT – Basque Institute of Statistics: an annual count of total housing units by neighbourhood in San Sebastian from January 2014 through to December 2018 but not for 2017. The number of housing units increased over time with a relatively small total growth of 2.73% from 2014 to 2018. Therefore, it can be assumed that the incidence of this variable in the explanation of our regression is not significant. However, we computed maximal variation ratio (percentage difference between minimum to maximum) of the number of housing units per neighbourhood (described in Table 4). Only six neighbourhoods had a maximum variation ratio over 3%. To contrast our hypothesis, we tested two models: one including all the neighbourhoods and another one without the neighbourhoods with a maximum variation ratio higher than 3%. No significant differences were found.

We obtained detailed review data for listings on Airbnb in San Sebastian from January 2013 through to December 2018 from web scrapes conducted on 30 January 2019 by InsideAirbnb.com and/or its researchers, who obtain and provide data to the public for research purposes. These web scrapes provide an Airbnb-assigned identification code of listings and comment/review dates. In this way we can check the houses listed on Airbnb which are really active, omitting those that are advertised but not active. We calculate Airbnb intensity as the number of reviews received by all the Airbnb listed units in a neighbourhood per each 100 housing units in that neighbourhood (EUSTAT – Basque Institute of Statistics) for each month. Table 5 summarises these data. The mean number of reviews by month and neighbourhood is 40 reviews and the mean of the Airbnb intensity by month and neighbourhood is 0.7453.

Table 5. Descriptive statistics on total housing and Airbnb reviews by neighbourhood.

	Mean	Standard deviation	Count
Total housing units (2018)	5421	4498	17
# Airbnb reviews (monthly)	40	101	1224
Airbnb density (monthly)	1.240	1.660	1224

Airbnb density=# of reviews received by all listings in a neighbourhood per each 100 housing units in that neighbourhood.
Source: By the authors from Airbnb data from Inside Airbnb (2019), January 2019 and EUSTAT.

Table 6. Effects of Airbnb density in log10 of asking rents of all units.

	+1 month		+2 month	+3 month
Delay	(1)	(2)	(3)	(4)
Airbnb density a	0.0185***(0.0023)	0.0177***(0.0026)	0.0181***(0.0023)	0.0169***(0.0024)
Elevator	0.0802***(0.0045)	0.0825***(0.0050)	0.0801***(0.0045)	0.0800***(0.0045)
Bathrooms	0.1367***(0.0040)	0.1378***(0.0044)	0.1367***(0.0040)	0.1369***(0.0040)
Bedrooms	0.0701***(0.0024)	0.0753***(0.0026)	0.0701***(0.0024)	0.0701***(0.0024)
Square metres (per 100)	0.2114***(0.0067)	0.1950***(0.0071)	0.2115***(0.0067)	0.2113***(0.0067)
New restaurants/bars		−0.0007(0.0008)		
Unemployment variation rate		0.0112***(0.0042)		
Month-Year fixed effect	X	X	X	X
Neighborhood fixed effect	X	X	X	X
N	17,655	15,402	17,655	17,655

Standard errors in parentheses. *$p < 0.10$; ** $p < 0.01$; *** $p < 0.001$.
Sources: Airbnb data from Inside Airbnb (2019), January 2019. Rental data from Idealista.com obtained from Statistical Authority of the Department of the Enviroment, Spatial Planning and Housing of the Basque Country Government. Data on newly licenced restaurants and bar and unemployment rate from Fomento de San Sebastián.

We used data from Fomento San Sebastian, the municipal public office dedicated to economic and social development and promotion of the city, to calculate the annual variation rate of the number of licenced bars and restaurants by neighbourhood in San Sebastian and unemployment variation rate by neighbourhood from 2014 to 2018.

4.4. Results

We present results for our regression proposal, estimating the impact of Airbnb density on asking rents, in Table 6. In Column 1, Airbnb intensity is the number of Airbnb units listed divided by the total number of housing units from the previous month. This is followed by characteristics of the unit: size in hundreds of square metres, number of bedrooms, number of bathrooms and whether or not there is an elevator. *New restaurants/bars* represent the variation rate of the numbers of restaurants/bars, which is calculated by dividing the licences of one year with the previous year. We include the change in *unemployment rate* as the main socio-economic indicator. We also include both time and neighbourhood fixed effects in order to control for any time trends or tract level unobservable characteristics. The standard errors are clustered at the neighbourhood level. We find evidence that Airbnb intensity does appear to increase rents. Specifically, to describe the magnitude of the 0.0185 coefficient on Airbnb intensity, a one standard deviation increase in Airbnb intensity in a given census tract raises asking rents by 7.3%. As expected, unit characteristics have

Table 7. Effects of Airbnb density in log10 of asking rents depending on bedroom number.

	(5) 0–1 BD	(6) $\geq$ 2 BD
Airbnb density a	0.0103(0.0060)	0.0214***(0.0029)
Elevator	0.1029***(0.0112)	0.0760***(0.0057)
Bathrooms	0.0649**(0.0257)	0.1430***(0.0045)
Bedrooms	0.0725***(0.0131)	0.0809***(0.0037)
Square metres (per 100)	0.3461***(0.0232)	0.1759***(0.0076)
Month-Year fixed effect	X	X
Neighborhood fixed effect	X	X
N	3510	14,145

Standard errors in parentheses. *$p < 0.10$; ** $p < 0.01$; *** $p < 0.001$.
Sources: Airbnb data from Inside Airbnb (2019), January 2019. Rental data from Idealista.com obtained from Statistical Authority of the Department of the Enviroment, Spatial Planning and Housing of the Basque Country Government.

diverse effects on asking rents, with use of an elevator increasing asking rents by 20.3%, each additional bathroom increasing asking rents by 37%, each additional bedroom increasing asking rents by 17.5%, and each additional hundred square metre increasing asking rents by 62.7%. Our model could be biased since it could be omitting changes that might be occurring in other neighbourhood variables at the same time as changes in Airbnb intensity. Therefore, the intensity coefficient may be identifying these changes rather than the causal effect of Airbnb on asking rents.

Another possible source of bias is the omission of endogenous variables in the neighbourhood that could be having an effect on asking rents. To control for this, we include two indicators of neighbourhood change. Firstly, we track an important urban neighbourhood amenity, nearby restaurants/bars (see Horn and Merante [2017] for a possible explanation), and secondly, we use change in the *unemployment rate* as a main socio-economic indicator. We present these results in Column (2) of Table 6. We see that with these additional controls the coefficient on Airbnb intensity effect is slightly lower and still significant at the 0.1% level, thus bringing us closer to isolating the relationship between Airbnb intensity and asking rents. In this case, the time period is from 2014 to 2018 because we have no data on new restaurants/bars and changes in the unemployment rate for 2013 and so the sample drops to 15,402. Of course there are still other changes that could be taking place at the neighbourhood level which we cannot measure and that could be biasing these results, though we believe these are the most salient.

In columns 3 and 4, Airbnb intensity is the effect of the intensity of the two and three months before, respectively. The results show that the effect of Airbnb intensity is still significant but with lower coefficients over time, suggesting that price is better adapted to Airbnb intensity in the short term. All other variables behave identically to the initial regression (column 1), so we test results with a further robustness check. One of the characteristics of Airbnb listings is that they may offer a single bedroom for rent. In theory, the single bedroom listings have no impact on the long-term market. Considering that much of our Airbnb listings in the sample (45%) offer only a room for rent, we test whether the effect of Airbnb intensity on the asking rents may be limited to units with two or more bedrooms (see Horn and Merante [2017] for a possible explanation). In Table 7 we present the results for our regression model estimating the effect of Airbnb intensity on asking rents depending on bedroom number.

Table 8. Effects of Airbnb density in log10 of asking rents after excluding neighbourhoods where the number of housing units varied over 3% in the period 2014–2018.

	(7)	(8)
Airbnb density a	0.0203***(0.0031)	0.0197***(0.0032)
Elevator	0.0768***(0.0059)	0.0767***(0.0059)
Bathrooms	0.1391***(0.0054)	0.1389***(0.0054)
Bedrooms	0.0700***(0.0033)	0.0702***(0.0033)
Square metres (per 100)	0.2419***(0.0093)	0.2418***(0.0093)
New restaurants/bars		−0.0001 (0.0010)
Unemployment variation rate		0.0118**(0.0051)
Month-Year fixed effect	X	X
Neighborhood fixed effect	X	X
N	13,278	11,667

Standard errors in parentheses. *$p < 0.10$; ** $p < 0.01$; *** $p < 0.001$.
Sources: Airbnb data from Inside Airbnb (2019), January 2019. Rental data from Idealista.com obtained from Statistical Authority of the Department of the Enviroment, Spatial Planning and Housing of the Basque Country Government. Data on newly licenced restaurants and bar and unemployment rate from Fomento de San Sebastián.

In Columns 5 and 6, we examine the relationship between Airbnb listings and asking price for two groups of units for rent: one-bedroom units (column 5) and units with two or more bedrooms (column 6). In Column (5) we see that the relationship between Airbnb intensity and the asking rents of one-bedroom units is no longer statistically significant, while that between Airbnb intensity and the asking prices of two or more bedroom units is not only larger than that for all units (column 1) but is now statistically significant at the 0.1% level. The results show that the rent for one-bedroom units is not affected by Airbnb listings that offer entire homes for rent, but the long-term market for homes of two or more bedrooms is potentially affected by all Airbnb listings. In any case, we cannot draw too strong a conclusion from this variation because the size of the coefficients and the standard errors are only slightly different.

Finally, we examine our proposed mechanism for the relationship between Airbnb intensity and asking rents (column 1 and 2 in Table 8) after excluding neighbourhoods where the number of housing units varied over 3%, in Table 8. We can see that the coefficient on Airbnb intensity is considerably larger and still significant at 0.1%. In column (8) we present results with our full set of neighbourhood controls, again finding similar results. The results indicate that in neighbourhoods with moderate growth in housing units, the effect of Airbnb intensity on asking rents is significantly greater.

5. Discussion: Airbnb and the residential market

In the international sphere there is growing concern regarding the impact that Airbnb is having on the price of housing in host communities, with special emphasis placed on gentrification and displacement issues (BJH Advisors, 2016; Lee, 2016; New York Communities for Change & Real Affordability for All [NYCCRAA], 2015; Samaan, 2015; Wachsmuth & Weisler, 2018). Generally speaking, studies carried out in this regard show that tourism is a relevant factor that exerts pressure on the real estate market (Gurran & Phibbs, 2017; Horn & Merante, 2017; Lee, 2016; Wachsmuth & Weisler, 2018; Yrigoy, 2019).

A recent study, carried out by Coyle and Yeung (2016) found mixed results. While the estimate calculated showed no relationship between the intensity of Airbnb use and the price of rents, in the case of the UK they did find a significant positive correlation. For every 1% increase in the number of Airbnb activities there was, on average, an associated 0.22 rise in the rental index. One of the most relevant studies developed by Horn and Merante (2017) in the city of Boston found that a one standard deviation increase in the intensity of Airbnb use is associated with an increase in asking rents of 0.4%.

It is true that the real estate market is tremendously complex and there are many factors that can influence it and, over the past few years, many different authors have attempted to analyse this relationship. In Spain recent research work has paid attention to the increase in demand for rental housing and the purchase of housing for use as tourist accommodation, as is the case in Barcelona (Blanco-Romero et al., 2018).

In the case of our empirical study, the main results show that a one standard deviation increase in Airbnb intensity is associated with an increase of 7.3% in rental prices. This reflects a higher effect than that found by studies such as those mentioned above. However, they are consistent with studies carried out in more similar geographical contexts. For example, a recent study by Rodríguez-Pérez de Arenaza et al. (2019) found that Airbnb listings explain 13.69% of the price of residential rental prices in the coastal area of Andalusia (Spain), thus showing that tourist rental pressure explains a significant part of the price share of residential rental on the Spanish coast.

In this regard, the characteristics of each housing market must be taken into account to properly interpret the results. The Spanish housing market has been widely characterised as rather imbalanced: Spain is a homeowners' country (Etxezarreta et al., 2018; Hoekstra et al., 2010). For many Spaniards a house is their main or even the only patrimony, a similar characteristic of various Mediterranean housing systems (Leal & Martínez del Olmo, 2017).

In San Sebastian the share of home ownership was 80.6% in 2016 (85.9% in 2011), and 17.2% of the housing stock belong to the rental sector (8% in 2011; the remaining rate was categorised as 'other'), according to official population and housing census of the Basque Institute of Statistics.[3]

Therefore the relatively small size of the rental sector both in the Spanish housing market and in the city of San Sebastian could justify the higher effect of Airbnb listings on residential rental prices.

6. Conclusions

As previously stated, tourism is one of the biggest challenges that many cities need to face nowadays. The growing number of tourists on a global level has introduced new tensions in urban management. Local policy making in this respect is complicated due to conflicting interests of different groups and agents (local citizens, tourists, private companies and public institutions). Many of the most touristic cities have come to the conclusion that the era of tourism planning directed at maximising visitors may soon be over.

It is becoming more apparent that, in addition to the undeniably positive effects of tourism, uncontrolled mass tourism may also bring negative effects at all levels and for all actors. In our research, we focus on one of the many potential negative effects: the impact of tourism and the short term rental housing market on the residential rental market. The short term rentals, related to tourism and leisure, could be taking the place of long term rentals.

Similar debates and discussions have taken place in many cities, providing significant circumstantial evidence of the influence of short term rentals on the housing market. Airbnb concentrates its activity on areas of high touristic interest but it also tends to spread out to other neighbourhoods, increasing the pressure within the real-estate market.

After analysing the potential relation between tourism and housing sector and observing that a significant part of the lodgings offered via Airbnb in Spanish cities do not fit into the principles of the collaborative economy, we focus on the case of San Sebastian. In particular, we study the evolution of prices in the rental market in relation to the intensity of Airbnb use. This preliminary study seems to validate our hypothesis, i.e., touristic rentals are associated with the residential market's price rises. Those neighbourhoods most affected by tourism have shown higher rental price rises in recent years.

Specifically, the empirical study carried out in this paper reflects that a one standard deviation increase in Airbnb intensity is associated with an increase of 7.3% in rental prices, which corresponds for citywide average monthly asking rent of 1013 euros to increase 74 euros in average. This is a bigger effect than those measured empirically in other across-sea contexts, (such as Boston, UK, etc.), but not as big as in other Spanish coastal destinations (as in the Andalusian 'sun-and-beach' coast). Our results support the hypothesis that the effect of Airbnb on residential rentals is global but variable, and depends on the size of the residential rental offer.

Our suggestion for urban planners and managers in charge of urban tourist destinations is to reinforce regulation on tourist lodging offered by short-term house rentals. Reliable tools need to be developed which can assess the impact of the model of residential tourism via online platforms. In order to correctly estimate the correlation between short term holiday rentals and the affordability of housing for the local population, more detailed data is needed about housing supply, especially long-term rentals. This data and its analysis would give a better insight into whether the rise in prices responds to a rise in residential tourism or if it is due to other issues.

The object of study of our research is complex and changes in the long-term. For this reason, we believe that it would be of great interest to monitor this phenomenon in order to understand the direct effect of the municipal regulation that recently became effective over the tourism rentals market, as well as the indirect effect over the long-term rental and purchase markets. To be able to monitor this phenomenon, public administrations should endeavour to create up-to-date, comprehensive, reliable and accessible databases that can be analysed with as little bias as possible.

Finally, as a future line of research, we should assess the combined effect that the whole tourist lodging sector (new hotels and hostels, Airbnb, other short-term rental services, etc.) has on the long-term rentals, as a measure of the pressure that the

growth of tourism exerts on the real estate market. An increase in residential rental prices may push traditional renters out of the market and boost the investment and, consequently, prices in the housing market. Therefore, the effects of the tourist lodging sector would spread to, not only the long term rental market, but to the whole real estate market. Such a process may also lead to the displacement of traditional residents who do not have the resources to face the increase in housing rental and purchase prices. Whether this kind of displacement happens and its relation to tourism gentrification should be investigated. In addition, a depth qualitative analysis of such a complex phenomenon should be carried out. Opinions from citizens and other agents on their perceived positive and negative effects of tourism and its regulation, the need for more participatory public policies, etc. should be collated in order to offer public authorities the necessary tools to meet citizens' demands.

Notes

1. Hereinafter, 'San Sebastian'.
2. Survey of receiving tourist establishments ('Encuesta de establecimientos turísticos receptores').
3. However, big cities, such as Barcelona and Madrid tend to have relatively higher rental sectors; 30% corresponded to the rental sector in Barcelona in 2011 (63.9% to the home-ownership and 5.9% to 'other'), and the share of rental housing in Madrid was 20% in 2011 (home-ownership was 73% and 6.8% in the category of 'other') (Spanish Institute of Statistics).

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